**IT Networking 101**

Matthew Powers

Grand Canyon University

College of Engineering

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Professor Dilts

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IT networking is a fascinating process by which technology transfers information through various networks. In this case, the information being transferred will be that of a web browser, traveling to a web server and back. This paper aims to describe how exactly data will get from a web browser to a web server and back via IT networking as well as the possible errors along the way. However, to do this, some base ground needs to be established. This means starting by defining what a web server and web browser are and even before that, how they work in co-operation with things like the internet as well as possible problems that could occur in this communication.

To start, one must understand what precisely IT networking is and how it works. If broken down into its components, IT stands for information technology and networking is computers connected and interacting with one another. Inside of this network, there will be a client side and a server side. The client side is often the less powerful side that connects to the server side to ask for data stored on said server. It is important to note that while this can be done in a closed off area, separate from the internet, for purposes of this paper, it will be assumed that all networking done between computers will be done over the internet. One may then go on to ask what precisely the internet is. In layman terms, the internet is just a network that allows computers to communicate as described above, client and server with each other. (Client/server network)

With the knowledge of IT networking and the internet that is stated above, one can now begin to look at how it can be applied to a web browser and a web server. The web browser is the client side, and the web server is the server side in IT networking. Through the internet these communicate and transfer data back and forth. However, the question must now be how exactly this data is transferred over the internet when technology is rapidly being updated. The answer is that when all data is being transferred, it follows the OSI model and or the TCP/IP.

The OSI model or the Open systems Interconnection Model is a design that was implemented in 1984. Its purpose is that all computers follow the set rules of the OSI model which will then allow for them to all still be able to communicate regardless of device or software. These base rules were established under seven different layers to allow for streamlined connectivity between things such as web browsers and web servers. The first is the physical layer, this layer is how data is transferred physically via electricity in a system in either the web browser or the web server device. The next is the data layer, this is where data is packaged in these devices and corrected if any physical errors occurred. The third and fourth are the network and transport layers. In these layers, the data from said devices is now routed to each other’s address (IP address) through message routers that can simply distinguish where information is supposed to travel and set it on the path there with some checks and balances from the transport layer. From here, the session layer is tasked with having the web browser and web server communicate with one another. In this session, it may also be responsible with verifying that the correct device is who it says it is (logging into a secure account). From here, the last two layers on each device happen. The first is the presentation layer which is tasked with translating the data it has received into a form that the application layer will understand. Finally, the application layer takes the data the presentation layer rewrote and makes the end-user application, so in this instance, the web browser like google chrome or the web server where the data is stored and retrieved for services like goggle search. (What is the OSI Model?). The TCP/IP model is incredible similar to the OSI model listed above. The TCP/IP model however just groups the first two layers into the Network access layer and the last three into the Application layer. As a result, the TCP/IP model is comprised of a total of four groups (OSI vs. tcp/ip reference model).

Now that it has been establish as to how a web browser and a web server communicate, it is time to find some possible errors that could go wrong in this system and some possible solutions. One possible error would be if a system did not follow OSI and or TCP/IP. The reason this would be a problem is that if it doesn’t follow these layers of communication then it may not be able to get in contact with whatever it is attempting to reach. Some possible solutions would be to update a systems layers to follow that of OSI and or TCP/IP or have whatever you are trying to communicate with follow that of your systems layers. Another possible error could lie in the message routing component of your system. This is to say that the thing responsible for routing may be faulty or the address that a device is being routed to is outdated. In the case of the first problem, the solution would be to troubleshoot why your device is unable to send or receive data from and to that address (most likely a layer problem) and in the case of the second, the IP address would just need to be updated. In the case of a layer problem, the solution would be slightly more complicated and would require one to go through each individual layer, starting from the beginning to ensure that its primary functions are being done properly and work your way through it until all have been thoroughly analyzed.

Overall, the process of communication between a web browser (client side) and a web server (server side) can be simplified into seven simpler layers. These layers are comprised of various functions and capabilities that allow the device as a whole, to communicate effectively and properly. This is good because it means that devices regardless of model or software can communicate with each other. On top of this, when devices cannot communicate properly or effectively, there is a step-by-step process that can be done to solve the problem. This is done by going through each individual layer of a device and ensuring that it is running properly. Where it is not running correctly, it can then be updated or fixed.

References

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